

30TH SPACE WING PLAN 32-7080

CHAPTER 4 PROGRAM ORGANIZATION AND PLANNING

This chapter provides information on how the 30th Space Wing will organize and conduct its P2 planning functions so that:

1. Policy will be clearly established and communicated;
2. Goals will be set and strategies for meeting goals will be implemented;
3. The P2 Working Group and Opportunity Assessment Team(s) will be formed and functioning;
4. Data collection and reporting on baselines and assessments will be comprehensive and coordinated; and
5. Programming and budgeting will be conducted to ensure P2 success.

The organization and planning involved in the P2 program must account for and accomplish all actions inherent in the P2 process. Figure 4-1, "The Pollution Prevention Process", diagrams the elements of the process. Management Action Plan (MAP) formats, included later in this chapter and shown in detail in Appendix A1, illustrate how tasking will be assigned, coordinated, monitored and reported. The P2 Working Group is the 30th Space Wing focal point for P2 activities.

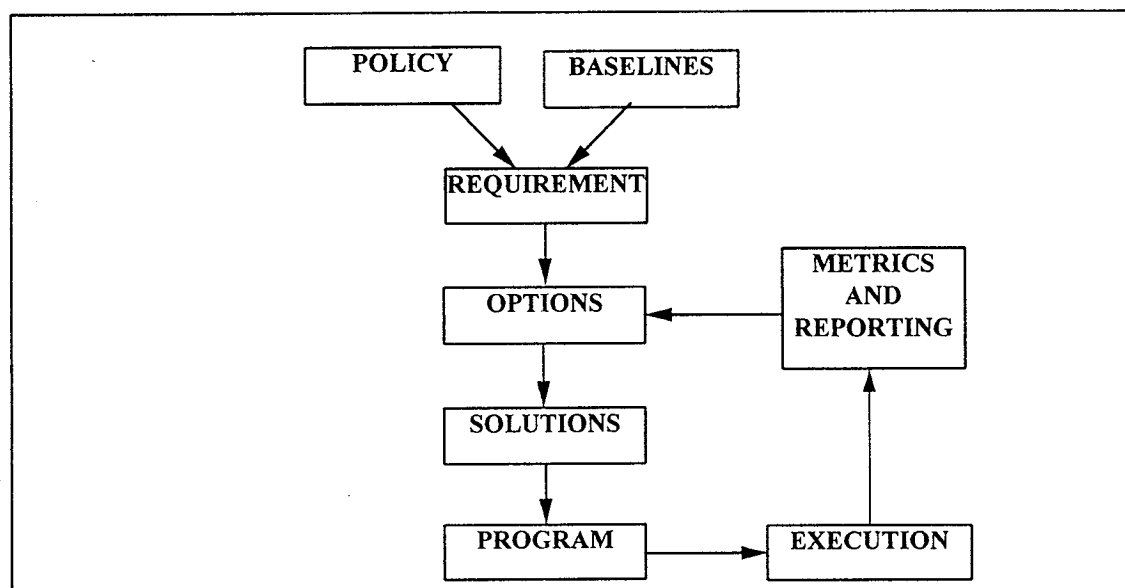


Figure 4-1, The Pollution Prevention Process

SECTION A. MANAGEMENT COMMITMENT.

1. For the 30th Space Wing Pollution Prevention Program to be successful, commitment from all levels of management is essential. From the Wing Commander to shop foremen, to process operators, everyone has important roles in reducing and eliminating pollution. Managers and supervisors need to be knowledgeable and informed about the P2 program and the processes they control. This can be accomplished through training, reports, briefings, meetings, and other information sharing. Accountability for achieving P2 goals and objectives is also necessary. Accountability will be provided through periodic reports to senior managers. The P2 Working Group will provide quarterly briefings to senior managers at the EPC. This status briefing will highlight progress, problems and achievements. Appendices C and D provide reporting metrics data forms, summaries, and graphs to be used to show historical trends and the status of the 30th Space Wing P2 program. Through the P2 Working Group, tasking will be assigned, monitored and reported.
2. Another form of management commitment is the leadership role demonstrated in preparing and advocating P2 projects/initiatives. Careful leadership will recognize the need for both initial and recurring requirements. Appendix E1 provides guidance to be used in determining which pollution prevention projects have valid requirements for funding under the P2 budget. Support for funding of justified P2 programs, equipment, facilities and supplies is a direct measure of management commitment.
3. Pollution prevention can have several positive affects on 30th Space Wing activities. These include lower operating costs, lower waste disposal costs, more efficient operations, improved regulatory compliance, reduced environmental liabilities, and improved stewardship of the environment. In addition, the 30th Space Wing's image as a good neighbor is enhanced when P2 activities are made known to the public and to environmental action groups. "Teaming" arrangements with local and county governmental entities, development of pilot projects, solicitation of grant monies, etc. are tangible examples of the 30th Space Wing's management commitment to pollution prevention.
4. Despite everyone's commitment to the P2 program, it is inevitable that the demand for funds and other resources will exceed the 30th Space Wing's, and even the Air Force's ability, to support every P2 project/initiative. Consequently, good management and stewardship require that P2 decisions are properly classified as to priority level (P1, P2, P3) and are made to maximize the benefit derived from the resources invested. Choices must be made consistent with AFI 32-7001 requirements and be based upon sound facts and rational decisions; not upon trendy quick fixes. The following matrix, Figure 4-2, "Decision Matrix for Initiatives", offers a means by which initiatives can be evaluated and compared as to their benefit to the 30th Space Wing's overall P2 program. Each criterion involved in determining whether an option will be successful can be given a subjective numerical value. For each option considered, the values from each criterion can be summed, then ranked with other options to help determine which program to choose. The numbers assigned to each

criterion range from 0 to 10; the lower the sum of the criteria for an option, the less likely that the option will succeed in meeting P2 objectives. If any of the criteria score a "zero" the candidate initiative should be immediately eliminated from the group of acceptable options. The definitions of values for scoring and ranking P2 initiatives are shown in the criteria scoring and ranking section of Figure 4-2.

DECISION MATRIX FOR INITIATIVES

Candidate Initiative (Name & Number)	Applicability	Cost (ROI)	Time	Technology	Experience	Mission Impact	Liability	Regulations	Environmental Effects	Total
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

Figure 4-2, Decision Matrix for Initiatives

Figure 4-2 Scoring and Ranking Definitions

<u>Criteria</u>	<u>Ranking</u>	<u>Description</u>
Applicability	8-10	Entire 30 SW benefits from program.
	5-7	Entire 30 SW receives only limited benefits from program.
	2-4	Small segment of 30 SW benefits from the program.
	1	Small segment of 30 SW receives only limited benefits.
	0	No benefit to 30 SW.
Cost (ROI)	8-10	Limited or no cost; current program will cover cost.
	5-7	Program must be funded by available external resources (cost does not exceed \$50,000) and Return on Investment (ROI) within 2 years.
	2-4	Program must be funded by presently unavailable external resources (cost could exceed \$50,000) and ROI exceeds 2 years but less than 5 years.
	1	No USAF funding category exists (cost could exceed \$250,000) and ROI exceeds 5 years.
	0	No foreseeable return on investment within 10 years.
Time	8-10	Program implementation complete in less than 120 days.
	5-7	Program implementation complete 1 year from inception.
	2-4	Program implementation complete within 2 to 5 years.
	1	Program implementation not possible within 5 years.
	0	Program implementation not possible.
Available Technology	8-10	Technology for program in place or technology not a requirement.
	5-7	Technology readily available.
	2-4	Technology in development stage; can be acquired within 1 to 3 years.
	1	Technology as yet unproved; not likely to be proven within 5 years.
	0	Technology obsolete or inappropriate.
Experience Factor	8-10	Fully developed and universally available.
	5-7	Somewhat developed and limited availability.
	2-4	Still in research and development stage, not commercially available.
	1	No technology available.
	0	Experience proven unreliable.

Figure 4-2 (Continued) Scoring and Ranking Definitions

<u>Criteria</u>	<u>Ranking</u>	<u>Description</u>
Impact on Mission	8-10	Significant positive impact on cost, time, and labor. Contributes more than 10 percent to P2 goal(s).
	5-7	Some positive impact on cost, time and labor. Contributes less than 10 percent to P2 goal(s).
	2-4	Limited recognizable impact within 5 years. Contributes less than 2 percent to P2 goal(s).
	1	Clearly negative impact on cost, time, labor.
	0	Not within the guidelines established by 30 SW.
Liability	8-10	No legal or environmental liability to the USAF as a result of program implementation.
	5-7	Possible liability to the USAF through cooperative program or contractual changes.
	2-4	Strong potential for liability to the USAF due to specific changes in USAF program and policy.
	1	Strong potential for liability to the USAF resulting in financial losses; unacceptable risk factor involved in program implementation.
	0	Unacceptable risk /liability established by precedence.
Regulations/ Laws/ Agreements	8-10	Program initiative complies with agreements and existing Federal, State, and local laws. Permits/permitting not required.
	5-7	Some conflict may exist due to definition or scope of program. Permits/Permitting required.
	2-4	Conflict exists or program presupposes emerging Federal, State or local laws. Permits/Permitting required, but not possible.
	1	There is a clear conflict with existing and/or emerging laws or statutes.
	0	Direct Violation of Federal/State/Local laws or AF regulations.
Environmental Effects	8-10	Benefits will be shown in many areas from program implementation. Several environmental media benefit.
	5-7	Some benefits may result. Only one environmental medium benefits.
	2-4	Program implementation has no effect on the environment.
	1	There may be negative effects on the environment.
	0	Known negative effects on the environment.

Figure 4-2 (Continued) Scoring and Ranking Definitions

<u>Criteria</u>	<u>Ranking</u>	<u>Description</u>
Total Score*		* Any total with a zero element for one or more of the categories above is automatically excluded from consideration due to known negative declarations
68-90		Ideal program, easily accomplished with no negative impacts to the USAF.
41-67		Acceptable program once objectionable criteria are resolved or eliminated; will require longer term implementation due to planning and implementation factors.
14-40		Difficult to accomplish, may counter the interests of P2; long term initiative with extended planning curve.
<13		Not acceptable, not worthy of serious consideration, and possibly a legal liability.

SECTION B. MANAGEMENT ACTION PLANS (MAPs). Management Action Plans are the tools used to run the P2 program for the 30th Space Wing. MAPs cover the entire P2 process and are used to “flesh out” the P2 conceptual model of Process - Program - Execution. Process MAPs answer the what, how, who and when things are done for each of the blocks in Figure 4-1 (to be amplified in this, and Chapters 5 and 6). Program MAPs consist of those what, how, who, and when actions needed for P2 funding, as described in Chapter 7. Execution MAPs consist of the same action questions as above and as described in this, and Chapters 5 and 6. Since MAPs are based upon **recurring** opportunity assessments, the MAPs used in this version of the PPMP will either be “first-cut” or notional (See Appendix A for detailed MAPs). Follow-on versions of MAPs will be refined further, and will reflect the on-going, evolutionary nature of the 30th Space Wing P2 program. Figure 4-3, “Management Action Plan - Example”, provides the generic outline for all MAPs. The three letter action symbols will be used to show which P2 element is being addressed by the MAP:

Policy	-	Pol	Program	-	Pro
Baseline	-	Bas	Execution	-	Exc
Requirement	-	Req	Reporting	-	Rep
Option	-	Opt	Goal	-	Gol
Solution	-	Sol	Project	-	Prj (Include A106 number)

ACTION	OPR (OCR)	COMPLETION DATE	
		ESTIMATED	ACTUAL
Initial: (First action under a specific heading. Assigned a unique, sequential number. Pol-001, for example, Policy Action Item 1)	EPC	30 Jun 93	27 Jun 93
Recurring: (First recurring action to support the initial action, if any. Number in sequence, Pol-001R a., where R is recurring and a. is the first recurring item supporting Pol-001. Follow with; Recurring: Pol-001R b., c., d.,as needed).			
Initial: Pol-002,...			
Recurring: Pol-002R a. ...			
Recurring: Pol-002R b. ...			

Figure 4-3, Management Action Plan - Example

SECTION C. GOAL SETTING.

1. Goal setting is among the first tasks that must be addressed by the P2 Working Group. Goals listed in Table 2-1 represent the minimum goals for the Air Force's P2 program. More restrictive goals may be recommended by the 30th Space Wing P2 Working Group for EPC approval; however, goals must be specific, measurable, realistically achievable and time-oriented. Also goals must be clearly identifiable as to the pollution source for which the goal is set and consistent with P2 program budget elements. Should an action contribute to more than one goal, the P2 Working Group will allocate percentages of contribution consistent with beneficial value, while precluding double counting. The P2 Working Group must also be cognizant of how meeting goals in one area could impact another area. For example, while a process to "dry" paint cans may reduce the disposal of hazardous waste, uncontrolled drying could contribute to air emissions and dried cans will add to the volume of municipal solid waste (MSW) requiring disposal. (Improper "drying" violates the P2 precept of not transferring problems across environmental media).
2. Another aspect of goal setting with which the P2 Working Group must deal is how best to translate base goals into goals for individual organizations and/or process owners. In reducing paper waste, for example, almost everyone could be expected to participate in a paper recycling program, but application of a universally applied flat rate of reduction may not be the best means to achieve the overall goal. The P2 Working Group must recognize what has already been done before arbitrarily assigning goals to individual processes or organizations across the base. Responsible goal setting cannot begin until baselining, and an understanding of the baselines, has occurred. Once baselines have been developed, goals can be rationally determined

based upon accepted measurements and achievable outcomes. Recurring surveys/reports will be used to objectively measure progress toward established goals.

SECTION D. BASELINE DEVELOPMENT. After the issuance of policy statements, the development and acceptance of P2 component baselines are the most important tasks needed to initiate an effective P2 program on VAFB and the remote sites.

1. Air Force Baselines.

- a. The Air Force has selected calendar year (CY) 1992 as the baseline year for the following P2 components:

- (1) Purchasing Class I ozone depleting chemicals (ODCs);
- (2) Purchasing EPA-17 industrial toxic pollutants (EPA-17);
- (3) Disposing of hazardous waste (HW); and
- (4) Disposing of municipal solid waste (MSW).

The unit of measure for these P2 elements is expressed in pounds. As an accounting practice, 30th Space Wing will round weights less than a pound to the nearest ounce, and any fraction over a pound will be rounded to the nearest pound. When the number of pounds becomes greater than 10,000, then a pounds to tons conversion will be used and will include fractions of tons expressed to the nearest tenth of a ton (i.e. 10,200 lbs equals 5.1 tons). All Air Force baselines are structured in a similar manner; that is, a definite period of time (usually CY, sometimes fiscal year (FY)) and quantifiable units of measure (pounds, gallons, percentages, etc.).

- b. Unlike other P2 elements, Environmentally Preferred Products (Affirmative Procurement) does not have a fixed baseline year. Instead annual procurements of "EPA Guideline Items" are monitored on a continuous basis to ensure that the percentage of purchases in each category meets the guideline's criteria for recycled content. Present EPA Guideline Items are: paper and paper products; lubricating oil; retread tires; building insulation products; and cement and concrete containing fly ash. The unit of measure for this P2 component is dollar value, where the total value of product (item) purchased that meets the guideline's criteria is compared to the total value of all product (items) procured in that EPA category. The resulting percentages are used to measure the effectiveness of the Affirmative Procurement activities for 30th Space Wing activities. MAJCOMs will establish Environmentally Preferred Products (Affirmative Procurement) programs for all of the EPA Guideline Items. The 30th Space Wing's P2 Working Group will contact Air Force Space Command (AFSPC) for Environmentally Preferred Products (Affirmative Procurement) guidance and then will disseminate the information throughout the 30th Space Wing.
- c. The energy conservation baseline year is CY 1985, and the unit of measure is MBTUs/square foot. This is derived by multiplying the total square footage of an

installation by the BTU usage/square foot. Energy consumption includes energy to operate a facility (power, heating/cooling, hot water, etc.) and energy usage within a facility (computers, equipment, etc.). Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, and the Energy Policy Act of 1992 drive the Air Force's Energy Conservation program. Base inputs into the Defense Utility Reporting System (DUERS) are used to track progress toward energy conservation goals.

- d. Section 313 of EPCRA is of significant importance to the Air Force. This section requires federal facilities to submit annual U.S. EPA Toxic Release Inventory (TRI) reports by 1 July each year for the previous calendar year's data. Progress towards the Air Force goal of 50 percent reduction in TRI chemical releases will be measured against the 1994 baseline.
- e. The pesticide management element has established three separate goals and measures of merit. Under Measure of Merit 2, the DoD has established FY93 as the baseline year.

2. 30th Space Wing Baselines.

- a. For the most part, baseline years and units of measure are prescribed and the 30th Space Wing must follow them. AFI 32-7080, paragraph 2.3.1.1., does provide for baseline adjustments, but the 30th Space Wing would have to provide justification and submit a request for baseline change through AFSPC to HQ USAF/CEV.
- b. The P2 Working Group has two possible methodologies or approaches available for obtaining baseline data: a "top-down" analysis or a "bottom-up" analysis. The "top-down" approach starts with the 30th Space Wing's available procurement records and waste generation records and uses these data to develop 30th Space Wing baselines. Subsequent detailed process analysis is conducted on only a selected number of activities. The "bottom-up" approach begins with identifying every activity on the installation which uses targeted chemicals or produces wastes, then performs detailed analysis and calculation of target chemical usage or waste generation for every activity, and sums these individual process results to obtain the 30th Space Wing baselines.
 - (1) The methodology for "top-down" baselining involves searching 30th Space Wing's supply, contracting, bioenvironmental and environmental records for ODCs and EPA-17 chemical purchases and 30th Space Wing's hazardous and municipal solid waste generation data; totaling these data for each program component and reporting these data as the 30th Space Wing's baseline. Then the P2 Working Group will identify a limited number of organizations and processes which purchase the largest amounts of the targeted substances, or generate the largest or most toxic waste streams, for further study and development of P2 opportunity assessments and unit/contractor goal assignments. The advantage of this approach is that it

minimizes the labor required to develop baselines; the disadvantages is that it does not provide a full picture of all processes which could yield worthwhile P2 opportunities, and/or participation in attaining goals.

- (2) The methodology for "bottom-up" baselining requires identifying all activities of 30th Space Wing that use targeted substances or generate wastes; fully documenting each process, the materials used and wastes generated, and then summing all activities' material usage and waste generation quantities to obtain the total baselines for each P2 component. The advantage of this approach is that it provides a comprehensive picture of all processes and provides a complete and detailed foundation for development of P2 opportunities and assignment of specific unit/contractor goals. The disadvantage is that it requires extensive effort and knowledge of all 30th Space Wing processes.
 - (3) In the end, compromise between the two approaches may provide the best solution. The P2 Working Group will quantify 30th Space Wing's baseline data for each P2 program component using the top-down approach; select the activities believed to use the most targeted chemicals and generate the most wastes; and then perform process analysis on the selected activities, according to the process analysis methodology presented in Chapter 6 of this plan. If the selected activities don't yield enough reduction to meet the goals, another iteration of activity selection and analysis will be accomplished. Meeting Air Force reduction goals will require consideration of a sufficient number of processes to identify enough material and waste reduction opportunities to meet the goals of each P2 program component. The identification of these opportunities still requires detailed analysis of the inputs, outputs and costs for each process. Items such as cost must also be collected during 30th Space Wing's baselining processes.
- c. The P2 Working Group will have at its disposal, or direct units/contractors to use the following fundamental sources of information when determining baseline data: (1) purchase data from supply sources and contracting, to include contractors; (2) shop interviews (when accomplished); (3) inventory data from the HAZMART; (4) Bioenvironmental Engineering annual shop surveys and inventories (AF Form 2761); (5) any prior installation reports; (6) waste disposal data from hazardous waste manifests and annual/biennial reports, as well as disposal contracting information. Professional judgment will be used to reconcile the data if the numbers will not match. The baseline data within activities and finally for the base will be coordinated through the P2 Working Group and approved by the EPC.
3. Baseline Data Base(s). Data base requirements for P2 baselines must be determined in the context of the entire P2 program, to include the WIMS-ES and its P2 module. The P2 Working Group will develop data input forms so that collection of information can be centrally controlled while executed across diverse and dispersed

operations. Information must be gathered, input, assessed and reported in a timely fashion so that quarterly reports can be made to the EPC. Appendices C1-1 through C1-6 provides standardized forms to be used for reporting database information addressed in this PPMP.

SECTION E. TECHNICAL DATA REQUIREMENTS.

1. Many DoD and Air Force Technical Orders, MILSPECS and MILSTDs require specific substances to be used in maintenance and operations procedures/tasks. Unfortunately, many of the specified substances have been identified as harmful to human health and the environment. On the other hand, personnel cannot use a chemical other than that specifically prescribed by technical data for the specific application. Programs to update technical data requirements are on-going within the Air Force. Certain Air Logistics Centers have already had a "data call" to determine where technical data calls-out HAZMAT, and they have begun to look for acceptable alternatives. Locally, the P2 program must address this apparent dilemma of requirement and pollution, and the P2 Working Group must take action to identify such problems and propose solutions to resolve them.
2. Technical order changes can be effected at the base and unit level through the AFTO Form 22, Technical Order System Publication Improvement Report and Reply, system using applicable change request procedures. The Single Managers for the various technical orders, MILSPECS and MILSTDs will ultimately decide on the proposed change. Although the P2 Working Group must rely upon system or process experts to carry-out AFTO Form 22 initiatives, the P2 Working Group will focus management attention on this important P2 element by quarterly briefings to the EPC and by updates to the WIMS-ES P2 module (see Chapter 7, Figure 7-15 (13.14)).

SECTION F. RESEARCH AND DEVELOPMENT. Air Force Research and Development Centers are actively engaged in a variety of basic and applied research. Included among the many research projects are those which support P2 programs. Should 30th Space Wing's P2 program identify a need for research support, the P2 Working Group will use AFI 63-188, Civil Engineering Research, Development, and Acquisition, for processing P2 research requests into the Technology Master Process. As with all P2 actions, research requests should be briefed to the EPC for consideration and forwarding to the AFSPC EPC. The Air Force Center for Environmental Excellence (AFCEE) can also be contacted for support to determine if the Air Force Civil Engineering Support Agency has needed technologies already available. The use of this coordination/communication process provides the best use of limited research dollars and may allow the 30th Space Wing to "piggy-back" or share in research already programmed or in progress.

SECTION G. REPORTING AND TRACKING.

1. One of the essential requirements for an effective P2 program is an accurate and responsive reporting and tracking system. This system, at a minimum, must satisfy

the requirements levied by AFI 32-7080. That is, reports for each of the program elements must use the metrics and meet the submission timelines specified in the AFI. 30th Space Wing quarterly/annual reporting metrics for ODC, EPA-17 chemicals, HW, MSW, TRI chemicals, and EHS are located in Appendix C1. Summary tables for the aforementioned metrics are located in Appendix C2. Other reporting requirements are found in federal and/or state law (e.g. EPCRA, Form R; and SB-14, quadrennial updates or 90-day implementation rejection amendments). In addition, there are internal reporting requirements such as quarterly P2 Working Group reports to the EPC. Thus, 30th Space Wing must have a reporting and tracking system responsive to both internal and external requirements. Appendices C2-1 through C2-6 provide summary tables for recording and tracking the P2 program progress.

2. The chair of 30th Space Wing's P2 Working Group will function as "system administrator" for reporting and tracking. Supported by members of the P2 Working Group and resources within Civil Engineering, data for internal Air Force P2 reports will be collected, analyzed, formatted and prepared for submission. After verification by the P2 Working Group and approval by the EPC, reports will be submitted to AFSPC and Air Staff. For programming and budgeting reports, the previously described process will be followed with the addition of requester/originator review at the P2 Working Group verification step. Although certain other P2 reporting and tracking requirements may be much broader in application or more detailed in format, the same management principles apply:
 - a. centralized direction from the EPC;
 - b. execution by trained, knowledgeable people within organizations/functions; and
 - c. operational oversight by the P2 Working Group.

Specifics for reporting and tracking requirements can be found in MAPs in Appendix A1.

SECTION H. INCENTIVE PROGRAMS. Although incentive programs are not a mandated element within the P2 program, 30th Space Wing's P2 program will enjoy greater success if it acknowledges individual and unit contributions to P2 program management and execution. The P2 Working Group will develop an award/recognition program that highlights special efforts, with awards given quarterly and annually to both individuals and units. The program will include all 30th Space Wing personnel and units, civilians, and contractors. Awards will be based upon ideas, suggestions or actions that **tangibly** contribute to P2 goals. Awards will be presented at EPC meetings and will also be publicized in the base paper. The P2 Working Group will work with the base's Suggestion Program to ensure proper coordination, criteria development and execution. Contracting Officers should also consider including P2 accomplishments as part of their incentive opportunities (award fee, etc.) for contractors.

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CHAPTER 5 POLLUTION PREVENTION

This chapter presents information about pollution prevention principles and the different processes and activities to which pollution prevention practices can be applied. While some principles and practices are independently applicable, others may require changes in broader and external functions before achieving success for a specific process. For example, the centralized procurement of paint may allow for acceptable substitutions but those substitutes may not meet local air emissions standards. The system requiring change would be the procurement function, not the process which required the "correct" paint. Thus a logical approach to pollution prevention must recognize the broad as well as the specific process impacts because of how the many elements within the Pollution Prevention Program interact. The remainder of this chapter uses a "groupings" approach in order to simplify the many potential interactions of the P2 Program. Appendix A1 includes Management Action Plans (MAPs) for processes discussed in this chapter.

SECTION A. WASTE MINIMIZATION. As explained in Chapter 2, the Pollution Prevention Act of 1990 sought to prevent pollution through a systems approach encompassing the entire range of activities dealing with materials. The focus shifted from "end of the pipe" management to a broader, life cycle perspective; with waste minimization remaining the primary goal of pollution prevention. Present day management can no longer begin at the waste treatment step, it must begin at the point where decisions to procure materials, hazardous or otherwise, are made. This new approach is best exemplified in the adoption and use of the HAZMART--waste is reduced because excess quantities of materials are neither ordered nor issued. The P2 Working Group will also deal with waste minimization as it applies to municipal solid wastes. Also as stated in the glossary, waste minimization includes the reduction in toxicity (harmful effects) as well as reductions in waste volume or quantity. The proposed acid - base neutralization unit is an example of waste minimization through reduction of toxic affects. The P2 Working Group along with process managers will examine ways to accomplish both of these aspects of waste minimization.

1. Hazardous Materials Pharmacy (HAZMART) The Hazardous Materials Pharmacy concept embodies a cultural change in the management of hazardous materials for the 30th Space Wing and establishes single point control and accountability for the requisitioning, receipt, distribution, issue and reissue of hazardous materials. The HAZMART at Vandenberg AFB has been designated as the single point of authorization through which hazardous materials may be requested. Users who require hazardous materials submit their request to the HAZMART where it is reviewed by a team of experts from logistics (supply and contracting),

bioenvironmental engineering, civil engineering, and other offices as required. This review ensures the requester is authorized to use the material; the most environmentally benign product is obtained; and the quantity purchased will be the minimum necessary to fulfill the users needs. This centralized requisitioning system and review process reduces inventories, by coordinating material availability throughout the installation. The protocol for this review process is laid out in the 30th Space Wing HAZMART Implementation Guide. Following the review, if the acquisition of the requested material is authorized, the requisition is entered into the ENTRACK tracking system which follows the material from issue through use to final disposal. To ensure materials are accounted for fully, a barcode is assigned to each item issued. The HAZMART distributes hazardous materials in container sizes that are suitable to the user's needs, collects the unused quantities, and makes them available to other users. HAZMART personnel coordinate with outside agencies to recycle usable hazardous materials which no longer meet Air Force specifications. For the HAZMART to succeed, it must have the full support of both management and the users of hazardous material, optimizing the procurement, receipt, storage, issue, and disposal of hazardous material.

SECTION B. REDUCTION OF HAZARDOUS MATERIAL USAGE IMPACTS.

1. Source Reduction. The reduction of hazardous materials usage and disposal follows the P2 hierarchy as described in Chapter 1. Source reduction is the first level in the hierarchy. The process operator obtains only those materials and in those amounts which are "consumed" by the process. For example, if three quarts of paint are needed to paint a room, only three quarts are purchased; not a gallon. The HAZMART is the 30th Space Wing's solution for source reduction actions. However, effective source reduction begins with process owners and operators understanding and controlling process operations. With process owner and operators' participation and control, material requirements are managed as closely to the source as possible and responsibilities for program success are assigned to the appropriate action level. Again, using the painting example, if surface preparation and spot touch ups are done properly (process control), only one coat of paint may be required for proper coverage and protection instead of two. Many of the P2 options recommended by opportunity assessments of selected base processes, fit into the category of source reduction. Easily accomplished and inexpensive procedural changes were also included under the general heading of source reduction.
2. Recycling. There are two types of recycling; recycling within a process and recycling outside of the original process. Water used to wash a painter's hands can be collected and used to clean paint rollers; this residue might also be used to "thin" original water-based paint instead of being disposed of as waste. In this manner there is recycling within the process as well as conservation of water resources. Recycling of plastic milk containers and converting them into plastic benches or plastic fiber is an example of recycling outside the original process. Within the P2 Program there is another important recycling component, and that is environmentally preferred product

purchases (affirmative procurement). The affirmative procurement portion of the P2 Program requires that "EPA guideline items" containing recycled material be procured in lieu of procuring the same item, (e.g., paper without recycled material in its content).

3. Treatment. There are two broad categories of treatment; on-site treatment and off-site treatment. On-site treatment is the preferred choice, since it avoids transportation costs and certain liabilities associated with off-site treatment. Also, as with air pollution control permits, treatment may be a pre-condition before certain types of operations can occur. Another form of treatment is pre-treatment, where waste is treated to some specified level or standard prior to disposal or further treatment. Treatment is designed to reduce either the volume, amount, or toxicity of wastes. The 30th Space Wing currently conducts a number of treatment processes and will need to expand treatment options, if future waste minimization goals are to be met.
4. Disposal. Disposal is the final and least preferred option in the P2 hierarchy. In one sense, disposal does not represent pollution prevention success. However, when disposal complies with regulatory requirements and good management practices, pollution is prevented by controlling impacts on human health and the environment. The problem with disposal is that we cannot always predict the long-term impacts associated with certain disposal methods (i.e. landfilling). Thus, while all disposal must be accomplished in compliance with regulations, this option should be selected only when all other options in the P2 hierarchy have been exhausted. This P2 principle is applicable no matter if we are dealing with hazardous waste, solid waste, or industrial wastewater. Keeping the P2 hierarchy in mind, the remainder of this chapter discusses process "groupings".

SECTION C. INDUSTRIAL MAINTENANCE AND CLEANUP OPERATIONS.

1. General. Waste generated as the result of industrial (Air Force) operations, maintenance or cleanup activities for the 30th Space Wing can be municipal solid waste, non-hazardous solid or liquid waste, as well as hazardous wastes. The process sources for these wastes number in the hundreds and are derived from activities throughout the 30th Space Wing. As mentioned in Chapter 6 of this P2 Plan, recurring opportunity assessments will be used to identify potential reduction options. Options adopted under California SB-14 and those recommended by opportunity assessments will be reviewed by the P2 Working Group and considered for continuing or broader application.
2. SB-14/SB-1726 Requirements. In 1990 Vandenberg Air Force Base generated 476,973 pounds of hazardous waste and 4,083 pounds of extremely hazardous waste that was characterized by 38 California Waste Code (CWC) categories. Eight of those waste categories exceeded five percent of the total waste generated in 1990. Data for 1991, 1992, and 1993 were not available for this revision. In 1994 1,599,853 pounds of hazardous wastes were categorized into 49 unique waste

streams, of which 4 exceeded 5 percent of the total waste disposed. In 1995 2,041,221 pounds of hazardous wastes were categorized into 46 unique waste streams, with only 3 exceeding 5 percent of the total waste disposed. A complete list and analysis of the 30th Space Wing's 1990, 1994, and 1995 waste streams by category can be found in Appendices B1-1, B1-2, B1-3, B1-4, B2-1, B2-2, and B2-3. (Appendix B1-4 addresses remote site hazardous waste) Appendices B3-1, B3-2, and B3-3 provides a listing of source reduction measures. On 12 October 1995, a California DoD Pollution Prevention Roundtable was held at McClellan AFB. Mr. Pat Bennett with CAL-EPA's Department of Toxic Substances Control (DTSC) provided guidance for P2 plans pursuant to EO 12856. DTSC reviewed the Air Force Installation Pollution Prevention Program Guide (IP2PG) published in August 1995. DTSC agreed the Air Force IP2PG was acceptable, and that by including California Waste Code data along with a plan for reducing those wastes which exceed five percent of the total waste, a PPMP would forego SB-14 plan submittal requirements.

3. 30th Space Wing Process Groups. The 19 process groups shown in Table 5-1 were selected during the opportunity assessment process. They represent an important, if not all inclusive, starting point for pollution prevention actions associated with 30th Space Wing's industrial maintenance and cleanup operations. As the iterative process of opportunity assessment continues, long-term options with longer payback periods must also be considered for implementation.

Code	Process
AB	Abrasive Blasting
AC	Helicopter Cleaning
BA	Battery Shops
BO	Pesticide Applications
CP	Chemical Paint Stripping of Color Codes
ER	Avionics/Electronic Parts/Connectors Cleaning
FC	Fluids Change/Purging
IM	Industrial and Facility Maintenance
IO	Industrial Operation
IW	Industrial Waste Treatment
LA	Laboratory/Nondestructive Inspection
MS	Miscellaneous Processes
OO	One time only
PO	Painting Operations
PX	Photo/X-ray
SC	Spill Clean-up
SB	Still Bottoms
SK	Off-Base Solvent Recovery (Safety Kleen-type contractor)
SO	Solvents/Degreasing

Table 5-1, 30th Space Wing Process Groups

4. Minimization. SB-14 and opportunity assessments must focus on hazardous materials and the reduction of hazardous waste disposal. While this focus may not result in an immediate elimination or reduction of hazardous materials (e.g., ozone depleting substances (ODCs) and EPA-17 chemicals identified in Table 5-2 and 5-3), the long-term liability of hazardous waste disposal sets a precedence for pollution prevention gaining the attention it requires. For example, Vandenberg must pay particular attention to the California regulated wastes which constitute nearly half of its hazardous waste disposal.

TABLE 5-2
OZONE LAYER DEPLETING CHEMICALS

Halocarbon Number	Chemical Name CLASS I ODC	Primary Uses	CAS Number
CFC-11	Trichlorofluoromethane	1, 2, 3, 4, 5	75-69-4
CFC-12	Dichlorodifluoromethane	1, 2, 4	75-71-8
CFC-113	Trichlorotrifluoroethane	2, 3, 4	76-13-1
CFC-114	Dichlorotetrafluoroethane	1, 2, 3, 4, 6	76-14-2
CFC-115	Chloropentafluoroethane	6	76-15-3
Halon 1211	Bromochlorodifluoromethane	3, 7	421-01-2
Halon 1301	Bromotrifluoromethane	1, 3, 5	75-63-8
Halon 2402	Dibromotetrafluoroethane	1, 3	124-73-2
CFC-13	Chlorotrifluoromethane	6, 7	75-72-9
CFC-111	Pentachlorofluoroethane	0	954-56-3
CFC-112	Tetrachlorodifluoroethane	4	76-12-0
CFC-211	Heptachlorofluoropropane	0	422-78-6
CFC-212	Hexachlorodifluoropropane	0	3182-26-1
CFC-213	Pentachlorotrifluoropropane	0	2354-06-5
CFC-214	Tetrachlorotetrafluoropropane	0	29255-31-0
CFC-215	Trichloropentafluoropropane	0	4259-43-2
CFC-216	Dichlorohexafluoropropane	0	661-97-2
CFC-217	Chloroheptafluoropropane	0	422-86-6
Carbon Tetrachloride	Tetrachloroethane	1, 4, 5, 8	56-23-5
Methyl Chloroform	Trichloroethane (all isomers)	4, 5, 8	71-55-6
Methyl Bromide	Bromomethane	4, 5, 8	74-83-9

TABLE 5-2 (Continued)
OZONE LAYER DEPLETING CHEMICALS

Halocarbon Number	Chemical Name CLASS II ODC	Primary Uses	CAS Number
HCFC-21	Dichlorofluoromethane	1, 4	75-43-4, DR39289-28-6
HCFC-22	Chlorodifluoromethane	1, 4, 5	75-45-6, DR73666-77-0
HCFC-31	Chlorofluoromethane	0	593-70-4
HCFC-121	Tetrachlorofluoroethane	0	See Note 3 below
HCFC-122	Trichlorodifluoroethane	0	See Note 3 below
HCFC-123	Dichlorotrifluoroethane	1, 3	See Note 3 below
HCFC-124	Chlorotetrafluoroethane	1, 3	See Note 3 below
HCFC-131	Trichlorofluoroethane	0	See Note 3 below
HCFC-132	Dichlorodifluoroethane	0	See Note 3 below
HCFC-133	Chlorotrifluoroethane	0	See Note 3 below
HCFC-141	Dichlorofluoroethane	2	See Note 3 below
HCFC-142	Chlorodifluoroethane	1, 4, 5	See Note 3 below
HCFC-221	Hexachlorofluoropropane	0	See Note 3 below
HCFC-222	Pentachlorofluoropropane	0	See Note 3 below
HCFC-223	Tetrachlorotrifluoropropane	0	See Note 3 below
HCFC-224	Trichlorotetrafluoropropane	0	See Note 3 below
HCFC-225	Dichloropentafluoropropane	0	See Note 3 below
HCFC-226	Chlorohexafluoropropane	0	See Note 3 below
HCFC-231	Pentachlorofluoropropane	0	See Note 3 below
HCFC-232	Tetrachlorodifluoropropane	0	See Note 3 below
HCFC-233	Trichlorotrifluoropropane	0	See Note 3 below
HCFC-234	Dichlorotetrafluoropropane	0	See Note 3 below
HCFC-235	Chloropentafluoropropane	0	See Note 3 below
HCFC-241	Tetrachlorofluoropropane	0	See Note 3 below
HCFC-242	Trichlorodifluoropropane	0	See Note 3 below
HCFC-243	Dichlorotrifluoropropane	0	See Note 3 below
HCFC-244	Chlorotetrafluoropropane	0	See Note 3 below
HCFC-251	Trichlorofluoropropane	0	See Note 3 below
HCFC-252	Dichlorodifluoropropane	0	See Note 3 below
HCFC-253	Chlorotrifluoropropane	0	See Note 3 below
HCFC-261	Dichlorofluoropropane	0	See Note 3 below

TABLE 5-2 (Continued)
OZONE LAYER DEPLETING CHEMICALS

Halocarbon #	CLASS II ODC	Uses	CAS Number
HCFC-262	Chlorodifluoropropane	0	See Note 3 below
HCFC-271	Chlorofluoropropane	0	See Note 3 below

Notes on CAS Numbers:

1. DR in a number indicates a deleted registry number that was replaced with another registry number.
2. Some chemicals have multiple CAS numbers because registry numbers were assigned on premise that it was a trade name, although the chemical may be the same as another one already listed.
3. Multiple forms of this chemical exist, all with different CAS numbers. A complete listing is available from PRO-ACT.

TABLE 5-3
THE EPA-17 TARGET CHEMICAL LIST AND TYPICAL USES

<u>ORGANICS</u>	<u>TYPICAL USES</u>	<u>CAS #</u> (for pure substance, not compounds)
Benzene	Fuels, solvents, inks, paint thinner, component in plastics and tires	71-43-2
Toluene	Solvent in paints and coatings, fuels, cleaning agents, plastics	108-88-3
Xylene (includes ortho-, meta-, and para-)	Solvent in paints and coatings, cleaning agents, fuels	varies
Carbon Tetrachloride	Bearing cleaning and PMEL	56-23-5
Chloroform	Cleaning agents in Bearing shop, present in fluorocarbons	67-66-3
Dichloromethane (methylene chloride)	Wipe down cleaner, paint stripper, foam blowing	75-09-2
1,1,1 Trichloroethane (1,1,1-TCA)	Parts cleaning, degreasing	71-55-6
Trichloroethylene (TCE)	Degreasing, paints	79-01-6
Perchloroethylene (PERK)	Degreasing, dry cleaning	127-18-4

TABLE 5-3 (Continued)
THE EPA-17 TARGET CHEMICAL LIST AND TYPICAL USES

Methyl Ethyl Ketone (MEK)	Paints, cleaning agents adhesives, inks, gun cleaning, thinners	78-93-3
Methyl Isobutyl Ketone (MIBK)	Paints, cleaning agents	108-10-1
Cadmium and Compounds	Plating operations, batteries, pigments, chemical cleaning	7440-43-9 (Pure Cd)
Chromium and Compounds	Plating and paint preparation	7440-47-3 (Pure Cr)
Cyanides	Plating solutions	varies
Lead and Compounds	Batteries, paint, sealing compounds, lead solders	7439-92-1 (Pure Pb)
Mercury and Compounds	Laboratories, mercury vapor lamps, thermostats	7439-97-6 (Pure Hg)
Nickel and Compounds	Plating operations, batteries, welding	7440-02-0 (Pure Ni)

5. Air Emissions. Pollution resulting from air emissions is caused by releases from combustion sources, coating and solvent use; petroleum, oil and lubricant (POL) storage, distribution and vehicle operations; corrosion control; power production; remediation activities; and spills to name a few.. The 30th Space Wing has completed several emissions inventories, and the P2 Working Group can use this information to establish baselines and determine process control points where opportunity assessments should be conducted. The overall strategy to prevent air pollution will focus on solvent substitution wherever possible. When product substitution is not feasible, appropriate control devices may be employed to control and/or eliminate pollutant emissions. The Air Force Pollution Prevention Program does not have specific air pollution reduction goals as it does for hazardous and municipal solid waste; however, reduction of purchases of ODCs by 100 percent and EPA-17 chemicals by 50 percent represent an important part of the P2 program, and constitute a form of emission (source) reduction. As in the past, local mandates of the Santa Barbara County Air Pollution Control District (SBCAPCD) will continue to drive air emissions requirements and activities on the base.

6. Industrial Wastewater. Industrial wastewater is managed per the guidance contained in the base's Industrial Wastewater Management Plan. As defined in that plan, industrial wastewater exceeds the standards/criteria established for discharge to the ground or sewer system, but does not exceed EPA or California hazardous waste standards. These wastewaters are treated at the Industrial Wastewater Treatment Plant (IWTP) located on South Base. Industrial wastewater has no specific goal under the Air Force's P2 Program, yet the control and processing must remain within the capacity of the base to effectively manage it in accordance with Regional Water Quality Control Board discharge requirements. However, an approved, beneficial

reuse or industrial water reclamation would contribute to the P2 notion of resource conservation.

7. Industrial Contamination. Industrial contamination can effect both the sanitary sewer and the storm water systems. This contamination results from either a direct, deliberate discharge (pouring a chemical down the drain), or an indirect, inadvertent discharge (rainwater running off an oily parking lot).
 - a. Sanitary Wastewater. The domestic and non-domestic wastewater discharges from the main "contonment" area of Vandenberg are discharged to the sanitary sewer system which is ultimately controlled by the City of Lompoc. Wastes discharged to this system must meet the discharge requirements of the Permit (I-004), governing influent standards. In all cases, hazardous chemicals are prohibited from being placed in the sanitary sewer system. At other locations throughout the base where facilities are not connected to the Base-Lompoc sewer system, small package plants or septic systems are used for the collection and treatment of wastewaters. As with the main system, these smaller systems are regulated by permit or waste discharge requirements (WDRs). Pollution prevention at these locations is predicated upon the principle of discharge control. Water pollution does not have specific reduction goals. However, all sanitary wastewater systems must be operated in accordance with permit conditions to avoid violations and pollution of the environment.
 - b. Storm Water. Storm water systems will be monitored to evaluate compliance with pollutant discharge elimination permit requirements. These systems are designed primarily to carry storm or surface waters, but not sewage or industrial wastes. Thus there cannot be connections between the storm water and sanitary sewer systems. To prevent pollution due to storm water run-off, oil/water separators and covered storage areas may be required. The easiest and usually least expensive pollution prevention control measures applicable to storm waters are good housekeeping practices and administrative controls. The space launch complexes, uncovered tank areas with their bermed enclosures, the flightline ramp, parking lots and the base landfill represent potential sources for contamination of storm waters.

SECTION D. MUNICIPAL SOLID WASTE. The only waste type that can be accepted by Vandenberg's Class III landfill. Municipal solid waste (MSW) is generally termed trash, refuse and garbage; and includes waste plastics, paper, glass, wood, food products, construction debris, and other domestic waste products. MSW is generated by four distinct "communities". These are: the residential community which includes base housing, billeting and dormitories; the administrative community which includes all the offices and administrative functions on the base; and the industrial community which includes the space launch complexes, power production, base infrastructure and maintenance and the ICBM test and evaluation activities to name a few. The specific reduction goals for MSW are stated in Table 2-1. At Vandenberg many of the P2 activities for MSW already have been initiated through participation in Santa Barbara

County's Integrated Waste Management Program. The MSW reduction strategy emphasizes source reduction, recycling, waste segregation and composting. Public education will be an important factor in the success of MSW reduction program.

SECTION E. ENERGY/WATER CONSERVATION.

1. Energy Conservation. Energy conservation reduces pollution through the reduction of greenhouse gas emissions, protection of the stratospheric ozone, and prevention of acid rain. As electricity is generated by burning fossil fuel, it produces emissions of trace metals such as beryllium, cadmium, chromium, copper, manganese, mercury, nickel, and silver. Reducing energy consumption decreases emissions from combustion sources, lessens the need to mine and transport virgin fuels, and dispose of power plant wastes. The 30th Space Wing's goal to reduce facility energy (natural gas, coal, electricity, fuel oil, etc.) is 20% by 2000 and 30% by 2005 on a BTU/sq./ft basis using 1985 consumption as the baseline. Additionally, the AF P2 Strategy calls for industrial facilities to increase energy efficiency by 20% from a 1990 baseline. It also requires the Air Force to identify and accomplish all energy conservation actions which pay back in ten years or less, by the year 2005.

a. Energy Program. The energy program for the 30th Space Wing has two main components - Energy Awareness and Energy Project Investment. Energy Awareness simply means not using energy when it is not needed (i.e. turn off lights/equipment when not needed; buy energy efficient equipment when buying new or replacement products; don't leave windows and doors propped open when heating or cooling is needed). This component requires the managers and users of the facilities to be good stewards of energy and use it when necessary. Energy Project Investment is divided into three areas: government funds, utility company funds, and private sector funds. Two special DoD programs, the Energy Conservation Investment Program (ECIP) and the Federal Energy Management Program (FEMP), have been provided by Congress to fund energy projects. Utility companies are offering rebates for installing energy efficient equipment and have Demand Side Management (DSM) programs to fund energy efficient equipment installation on their customers' facilities. Within the private sector many companies have developed programs such as Shared Energy Savings (SES) and Energy Savings Performance Contracting (ESPC), that pays for the installation of energy efficient equipment on a customer's facilities up front and they get paid out of the savings realized by the customer. Congress has provided legislation to encourage government participation in private sector programs. The 30th Space Wing has implemented the following energy conservation projects:

- Lighting retrofits;
- Energy Monitoring and Control System (EMCS) expansion with direct digital control methodologies;
- HVAC retrofits; and
- Replacement of natural gas pipelines facilitywide.

- b. Other Typical Energy Conservation Opportunities. Examples of conservation measures (from simple to complex in nature) are provided in Table 5-4.

• Opportunities	• Measures
• Low Cost and No Cost Measures	<ul style="list-style-type: none"> • Turning off unneeded lights, computers, and copiers; • Reducing heating temperature/increasing cooling temperature; • Insulating walls, ceilings, and floors; • Installing storm doors and windows; • Installing weather stripping and caulking; • Keeping furnaces serviced; and • Planting shrubs around the windy sides of buildings to block wind and decrease heat loss from both conduction and convection.
• Some Investment Required	<ul style="list-style-type: none"> • Automatic energy control systems and associated equipment; • Furnace modifications including replacement burners, furnaces and/or boilers; • Cogeneration systems; and • Solar energy systems.
• Load Reduction	<ul style="list-style-type: none"> • Reducing lighting level or using energy efficient bulbs or fixtures, as encouraged by DOE's Federal Lighting Initiative helps reduce electric and cooling loads.
• Air Handling Opportunities	<ul style="list-style-type: none"> • Variable speed drive (VSD) fan motor controls; • Smaller, high-efficiency motors and fans; and • High-efficiency diffusers.
• Chiller Plant Opportunities	<ul style="list-style-type: none"> • Replace older inefficient chillers or retrofit with CFC substitute refrigerants; • VSD on compressor where appropriate; • Downsize pump; • VSD on pumps and cooling tower fans; • Heat pipes and desiccant dehumidification; and • Thermal storage systems.
• Heating	<ul style="list-style-type: none"> • Heat recovery; • Heat pumps; • Gas; and • Solar space heating systems.
• Hot Water	<ul style="list-style-type: none"> • Heat recovery; • Heat pumps; • Cogeneration; and • Solar thermal water heaters.

Table 5-4. Typical Energy Conservation Opportunities

2. Water Conservation. Water conservation is related to energy conservation and pollution prevention in two ways. First, approximately 80% of the cost (nationwide) results from the energy required to provide water. Second, reductions in water use will create corresponding reductions in wastewater treatment - which in turn reduces energy requirements, chemical usage, and the potential for environmental compliance

issues associated with effluent discharge. The 30th Space Wing's Pollution Prevention Strategy does not include a numeric goal for water conservation. Instead, it requires VAFB and the remote sites to identify and accomplish all water conservation actions which pay back in ten years or less. This is to be accomplished by 2005. The Defense Energy Program (DEPPM) 94-1 incorporates the Water Conservation program into the Energy Program. Two water programs have been designed to conserve water resources at VAFB and the remote sites. One to eliminate the current inefficient wastewater management system and the other to act as a source reduction program for all water resources.

- a. ENVVEST. The foundation of Vandenberg's water quality ENVVEST initiative is to eliminate the inefficient wastewater management system which incorporates sampling, characterizing, transporting, and treating to drinking water standards for a system that maximizes the beneficial reuse of wastewater in an industrial setting. The initiative goals include:

- Eliminate current command & control discharge approval practice;
- Establish policy guidance for closed-loop industrial water reclamation;
- Eliminate unnecessary transportation & treatment;
- Conserve local groundwater resources;
- Minimize multimedia environmental impacts associated with current processes;
- Minimize environmental release & noncompliance liabilities;
- Facilitate launch logistics and mission;
- Encourage application of "low tech" or upgradable treatment technologies; and
- Minimize compliance & O&M funding requirements.

The ENVVEST initiative presents unique opportunities for both environmental benefit and costs savings potential. Establishment of a closed loop system would facilitate the process of wastestream bulking and would relax the standards of characterization through the establishment of industrial thresholds. Sampling and analysis costs associated with industrial wastewater characterization could be reduced to 25% of current levels. Space launch complex wastewater contributions represent nearly 90% of all discharges to Vandenberg's IWTP. The remaining 10% of discharge contributions represent fairly inert waters, yet do not meet discharge to grade standards (e.g., well purge waters, sump pump dewatering, etc.). If properly managed these waters could be incorporated into a reuse process, eliminating the need for Vandenberg's IWTP altogether.

- b. Water Program. The 30th Space Wing's water program focuses on three main areas:

- (1). Performing Prioritization Surveys. The Defense Energy Program Procedural Memorandum (DEPPM) 94-1 requires that federal facilities conduct a water and energy prioritization survey by 7 September 1995. The purpose of the

survey is to determine the order in which facilities will receive their comprehensive audits. 30 CES/CEV is required to accomplish audits on 10% of 30th Space Wing's facilities each year.

- (2). Performing Comprehensive Facility Audits. The main purpose of an audit is to detect inefficient water systems, determine how much water and money is lost through leakage or waste, and determine a feasible method to implement conservation recommendations. Installations are encouraged to seek out suppliers that will provide free audits. GSA will provide a list of all utilities that offer no-cost water conservation audits and demand-side management services and incentives.
- (3). Promoting Effective Project Management. The success of a water conservation plan depends largely on personnel commitment. Before a conservation program is implemented, 30th Space Wing will notify facility occupants of the program and new procedures. Notices will be posted near water equipment with information about correct usage; a hotline set up for answering questions or leak reporting; flyers will be distributed with program information; and a system to recognize exceptional efforts by individuals will be established.

Projects will be prioritized according to their cost-effectiveness. Economic evaluation of water projects will include the direct cost of water; the cost of heating hot water saved; O&M costs of wells, pumps, treatment facilities; reduced wastewater disposal costs; O&M savings realized by process changes, new equipment; and the availability of grant money for the project. Funding to execute the water program comes from the same sources as the Energy Program. Typical water conservation opportunities with the most economical payback include the following:

- Plumbing retrofit (shower heads, toilets, etc.);
- Leak detection and repair;
- Xeriscaping, wastewater reuse, and other cost-effective landscaping techniques;
- Modifications to cooling towers, boilers, and process equipment; and
- Projects funded in whole or in part with grant money.

SECTION F. EPCRA AND THE TOXIC RELEASE INVENTORY (TRI). Emergency Planning and Community Right-To-Know Act (EPCRA) requires federal agencies to commit federal agency planning, management, and acquisition resources to fulfill the intentions of the Pollution Prevention Act of 1990. EPCRA requires the 30th Space Wing to notify local emergency planning entities (e.g., Vandenberg Fire Department acts as the administrative agency for the Santa Barbara County Fire Department) of the presence and quantities of hazardous materials at their facilities and to notify federal, state, and local authorities of inventories and releases of those substances.

1. Goals. Executive Order (EO) 12856 mandates agencies set voluntary goals to achieve a 50% reduction in total releases and off-site transfers of TRI toxic chemicals by 1999, based on a calendar year 1994 TRI baseline. In addition, EO 12856 directs each agency to establish voluntary goals for the reduction in use of toxic chemicals at facilities and in products purchased or manufactured by federal agencies. Each facility is expected to identify its own reduction goals and prepare a written plan outlining how it will contribute to the 50% DoD-wide reduction goal. The 30 SW PPMP meets this requirement.
2. Reporting. EPCRA is composed of 5 basic parts: Emergency Notification and Planning (Sections 301 to 303), Emergency Release Notification (Section 304), Community Right-to-Know or List of Material Safety Data Sheets (Section 311), Annual Chemical Inventory (Section 312), and Annual Toxic Chemical Release (Section 313). Sections 301 through 312 are intended to provide neighboring communities with all the information they need about hazardous chemicals on the federal facility for proper emergency response and planning. Section 313 requires the only report that is submitted to the EPA.
 - a. Section 301 sets up the State Emergency Response Commission (SERC). In California this is the California Emergency Planning and Response Committee (CEPRC), responsible to State Office of Emergency Services. There are 6 subregions or Local Emergency Planning Committees (LEPC), VAFB is in the Region I LEPC.
 - b. Section 302 requires facilities to notify the state emergency response commission if the facility handles Extremely Hazardous Substances (EHS) at or above the established Threshold Planning Quantities (TPQ). In California, this requirement is satisfied by submission of the information to the local responsible agency, Santa Barbara County Fire Department, as required by CA Health & Safety Code, Chapter 6.95. Within Santa Barbara County, VAFB has signed a Memorandum of Agreement (MOA) to participate in the Integrated Hazardous Materials Management System, wherein Business Plan information (including EHS) is submitted to the VAFB Fire Department, which in turn submits it to County Fire.
 - c. Section 303 requires the establishment of a Regional Emergency Response Plan, which has been done by the Region I LEPC. A Hazardous Materials Area Response Plan for Santa Barbara County has also been developed by Santa Barbara County Office of Emergency Services.
 - d. Section 304 requires the 30th Space Wing to immediately notify the Vandenberg Fire Department (above the reportable quantity - RQ) of an EHS or CERCLA section 102(a) hazardous substance release. Immediate notification is by phone, followed by written details of the release. Procedures for this notification are contained in 30SW Plan 32-4002, Hazardous Materials Emergency Response Plan.

- e. Section 311 requires VAFB to provide copies of all Material Safety Data Sheets (MSDSs), or a list of MSDSs, to Vandenberg Fire Department. The MSDSs are for all "hazardous chemicals" over a certain threshold: any chemical considered as physical or health hazards under OSHA hazard communication standards. The information is contained in the Business Plan submitted to the VAFB Fire Department, and subsequently forwarded to County Fire.
 - f. Section 312 requires a formal Tier I or Tier II report to be submitted to the EPA. This meets the requirements for facilities to provide inventory forms to the LEPC and CEPRC. In California, this requirement is satisfied by submission of the Business Plan. This plan contains all the information that local and state agencies need to know about the amounts, locations and storage conditions of hazardous chemicals and mixtures present during the reporting period. Like Section 311, certain exemptions apply to reduce the burden of reporting.
 - g. Section 313 provides a nationwide view of total annual releases to the environment and off-site transfers, of certain toxic chemicals. The TRI report or Form R was initially intended to inform the public and government officials of routine releases to the environment of toxic chemicals. With passage of the Pollution Prevention Act of 1990, the Form R was expanded to include pollution prevention and waste minimization progress as well. Completion of a Form R will require detailed transaction records, utilization and release data. The chemicals eligible for inclusion in the 1994 reports are those listed on the TRI List (40 CFR 372.65 - only 313 chemicals) current as of 1 Dec 93. For 1995 and beyond, an additional 286 chemicals are reportable. This list is subject to change; the latest information can be obtained from PRO-ACT (see Chapter 7). The TRI list is located in Appendix C1-9 under 30th Space Wing TRI reporting metrics.
3. Monitoring. The chemical monitoring required under EO 12856 tracks substance use (as calculated above threshold quantities) throughout all departments at VAFB and the remote sites (including what is vented, evaporated, and spilled). This provides a "blueprint" of the aggregate chemical handling at the site. For EPCRA 313, all federal facilities exceeding toxic chemical thresholds for: manufacture or import - 25,000 lbs/yr; process - 25,000 lbs/yr; otherwise use - 10,000 lbs/yr; must report on the Form R, as amended by the Pollution Prevention Act. Reporting applies even if facilities do not fall within SIC codes 20-39. Form R data is published annually by the EPA in the Annual Toxics Release Inventory Public Data Release. Totals of releases are given by state, facility and chemical.
- a. Tracking. The Hazardous Materials Pharmacy and the ENTRACK tracking system are excellent sources of information for compiling the 30th Space Wing's TRI report. Data collection forms for tracking TRI chemical usage for those organizations not participating in the HAZMART can be found in Appendix C1.

SECTION G. PESTICIDE MANAGEMENT.

1. Goals and Measures of Merit. Three goals and measures of merit have been established for DoD pest management operations:

- a. Measure of Merit 1, Installation of Pest Management Plan: By the end of FY 97, 100% of all DoD installations will have pest management plans prepared, reviewed, and updated annually by pest management professionals. DoDD 4150.7 specifies requirements for installation pest management plans.
- b. Measure of Merit 2, Annual Amount of Pesticide Applied: By the end of FY 2000, the amount of pesticide applied annually on DoD installations will be reduced by 50% from the FY 93 baseline in pounds of active ingredient. This requirement is reflected as an AF pollution prevention goal in the *Pollution Prevention Strategy*.
- c. Measure of Merit 3, Installation Pesticide Applicator Certification: By the end of FY 98, 100% of all DoD installation pesticide applicators will be properly certified within two years of employment. Also, all contractor employees performing pest management work on DoD installations shall be certified under an EPA or State Plan accepted in the state in which the work is conducted.

2. Integrated Pest Management (IPM). IPM is a wholistic approach to pest management that utilizes regular monitoring of pest populations to determine the interval and type of treatments to be made. It employs physical, mechanical, cultural, biological, and educational tactics to keep pest numbers low enough to prevent intolerable damage or annoyance. Program execution includes seven steps that are routine procedures for each pest problem:

- Identify Pest;
- Develop plan/strategy;
- Establish action thresholds;
- Monitor pest population;
- Control pest (optional);
- Document results; and
- Evaluate/redesign plan.

In contrast to the past practice of widespread pesticide application, IPM focuses on trapping, sanitation and exclusion for rodent control; exclusion for bird control; good fertilizing, mowing, and aeration practices, and the use of native plants for weed control. As a last resort the least toxic pesticides are to be used when these measures are inadequate.

SECTION H. NONPOINT SOURCE POLLUTION. Nonpoint source pollution results from runoff caused by rainfall, irrigation, and the application of fertilizers, pesticides and herbicides. As mentioned above, water pollution is not specifically targeted in the P2 program, but this does not mean that the base should ignore P2 opportunities as they apply to nonpoint source pollution. Vegetation control along roadways particularly near Vandenberg's wetlands will be accomplished without using harmful chemicals and pollutants. Pesticides will be applied in accordance with all applicable regulations and their introduction into the environment will be limited, based upon clearly demonstrated requirements and the lack of other less toxic alternatives.

SECTION I. MATERIAL PROCUREMENT.

1. Supply and Distribution. Materials used at Vandenberg come onto the base through a variety of methods. These methods include the traditional procurements through Supply, Medical Supply, COCESS, the Base Exchange (BX), Commissary, and Morale Welfare and Recreation; and other procurements such as local purchase and contractor acquired items. In order to effectively control what is brought onto the base, each of these procurement channels must be examined and made to participate in the P2 program. The issue exception coding (IEX) system monitors hazardous materials procured through Base Supply. IEX codes 7, 8, 9 and M identify those materials which pose a threat to human health and the environment. The P2 Working Group will use the IEX system to identify organizations requiring hazardous materials and will focus initial opportunity assessments based upon this information. As HAZMART services are expanded to include all organizations and contractors many of the procurement and distribution issues will be resolved, but not all of them. The P2 Working Group must establish procedures within the parameters of the commercialization agreements to include, to the extent possible, commercial space operations at Vandenberg in the P2 program. Commissary and BX procurements will also have to be worked by the P2 Working Group and involve direction from the EPC.
2. Recycled Products. Materials containing recycled constituents should be purchased whenever possible. The affirmative procurement requirements of the P2 program apply each and every year. As the number of recycled products on the market increases, the base should expand its purchases of these products. Recycled paper for administrative offices, for Commissary and BX shopping bags, and for shipping cartons must become the norm instead of the exception. Retread tires should be used whenever possible, particularly on vehicles which are for "light" use and remain primarily on the base. During the renovation of base housing, building insulation products containing recycled materials should be specified, as part of affirmative procurement actions.
3. Environmentally Preferred Products (Affirmative Procurement). EPA's goals for environmentally preferable product purchases are expressed in Executive Order 12873, Federal Acquisition, Recycling, and Waste Prevention, dated 22 Oct 93.

According to the EO, 100% of the products purchased by Executive agencies in each of several product categories ("EPA Guideline Items") shall meet or exceed certain standards for recycled content. EPA's original list of guideline items include paper and paper products, lubricating oil, retread tires, building insulation products, and cement and concrete containing fly ash. Goals for environmentally preferred products (affirmative procurement) are measured differently from the program components previously discussed. We do not develop a baseline and reduce our totals to some percentage of that baseline. Instead, we look at annual procurements made for each of the Guideline Items and determine what percentage of the purchases in each category met the guideline criteria for recycled content. On 1 May 1995, EPA issued a Final Rule adding 21 new guideline items in six product categories. The new guideline items and their product categories are: reclaimed engine coolants (Vehicular Products category); structural fiberboard, laminated paperboard, cement/concrete containing ground granulated blast furnace slag, carpet, floor tiles and patio blocks (Construction Products); traffic barricades and traffic cones (Transportation Products); playground surfaces and running tracks (Park and Recreation Products); hydraulic mulch and yard trimmings compost (Landscaping Products); office recycling containers, office waste receptacles, plastic desktop accessories, remanufactured toner cartridges, binders, and plastic trash bags (Non-Paper Office Products). The recycled content goals for some common use items is listed below.

- a. For high speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders and white woven envelopes, the minimum content standard is 20% postconsumer materials beginning 31 Dec 94. This increases to 30% beginning 31 Dec 98;
- b. For other uncoated printing and writing paper, the minimum content standard is 50% recovered materials, including 20% postconsumer materials beginning 31 Dec 94. This standard shall increase to 30% beginning 31 Dec 98;
- c. As an alternative to (a) and (b) above, for all printing and writing papers, the minimum content shall be 50% recovered materials that are a waste material byproduct of a finished product other than a paper or textile product which would otherwise be disposed of in a landfill.

The *Air Force Strategy* also calls for the Air Force to "promote the use of environmentally friendly materials in the construction and maintenance of facilities", and to "promote efficient material/energy use practices in the construction and maintenance of facilities." Pollution prevention program managers should remember to consider the construction and maintenance of facilities as potential processes for opportunity assessment, and work with project designers to identify and specify building products containing recycled/recovered material. Other goals for EPA Guideline Items can be found in 40 CFR, Part 247.

SECTION J. SYSTEM ACQUISITION. Pollution prevention begins with new system development. In this way pollution prevention is “engineered” into the acquisition process and life cycle of a new weapon system or process. While local bases usually do not contribute to this type of P2 activity, the 30th Space Wing, with its unique missions, may have a role to play in the acquisition process. As described in Chapter 4, Sections E and F, the 30th Space Wing can assert its influence in acquisition decisions. On the whole, however, this aspect of the P2 program will have minimal direct applicability to the installations.

SECTION K. ALLIED PROGRAMS. Although they are not core elements of the P2 program, certain allied activities are a part of the base’s pollution prevention strategy. These allied programs contribute to P2 goals for energy conservation, and can eliminate or reduce pollution as a consequence of sound environmental planning, decision-making and execution of programs.

1. Comprehensive Planning. Through a comprehensive understanding and management of resources, base managers can mitigate environmental impacts and pollution. Identification of sensitive habitats such as wetlands, and the location of certain projects away from these resources can eliminate or reduce potential pollution of the environment. The concentration of certain industrial activities can make sense both from an operational and an environmental standpoint. Comprehensive planning can result in risk identification and analyses, and the adoption of prudent, cost-effective measures for the mitigation of risk. This type of stewardship of resources can, in certain circumstances, directly contribute to pollution prevention goals. For example, spill containment may not eliminate spills, but it will certainly limit the degree of environmental impact and pollution.
2. Energy and Transportation Efficiency. The energy consumption reduction goals are clearly related to this allied program. Depletion of natural resources such as oil and gas is also reduced when energy conservation measures are enacted. Reduced energy consumption equates directly to pollution prevention. The contribution of vehicle emissions to air pollution is well known. 30th Space Wing programs which encourage carpooling and the use of hybrid powered buses are additional examples of P2 initiatives. Because energy and transportation efficiency programs involve broad-based support if they are to be effective, public awareness and education are one of the first investments that the P2 Working Group should make when embarking on these types of initiatives. The P2 Working Group will coordinate energy efficiency concerns and initiatives with the Base Energy Steering Group (30 CES/CEOEO).

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CHAPTER 6 OPPORTUNITY ASSESSMENTS

This chapter discusses the importance of opportunity assessments and describes how they contribute to an effective P2 program. A pollution prevention opportunity assessment is a systematic procedure designed to identify ways to reduce or eliminate waste or adverse environmental impacts. Opportunity assessments are the actions which give this plan substance and provide the facts upon which pollution prevention decisions can be made. Assessments are, in effect, the starting points for pollution prevention initiatives and provide the tangible standards used to evaluate how processes contribute to the generation of pollution. The Air Force's and 30th Space Wing's P2 programs are based upon the requirement for recurring opportunity assessments.

SECTION A. OPPORTUNITY ASSESSMENT TEAM(S). The P2 program requires a substantial and dedicated effort from opportunity assessment teams. Team members can be either ad hoc participants assigned to evaluate a particular process, or they can be outside contractors hired to complete assessments for a variety of processes on the base. In fact, 30th Space Wing has elected to use both types of teams for conducting its opportunity assessments. In either case, these teams report their findings to the P2 Working Group for evaluation and implementation. Typically opportunity assessment teams will be composed of five to seven people who understand the process under evaluation and the requirements of the P2 program (see Table 3-3). Team members must have sufficient experience so they can identify all the elements contributing to a process, and be sufficiently knowledgeable to make recommendations which realistically offer the potential for positive contribution to P2 goals.

SECTION B. OPERATIONAL METHODOLOGY. Figure 6-1, Pollution Prevention Assessment Overview, graphically portrays the process used to conduct opportunity assessments.

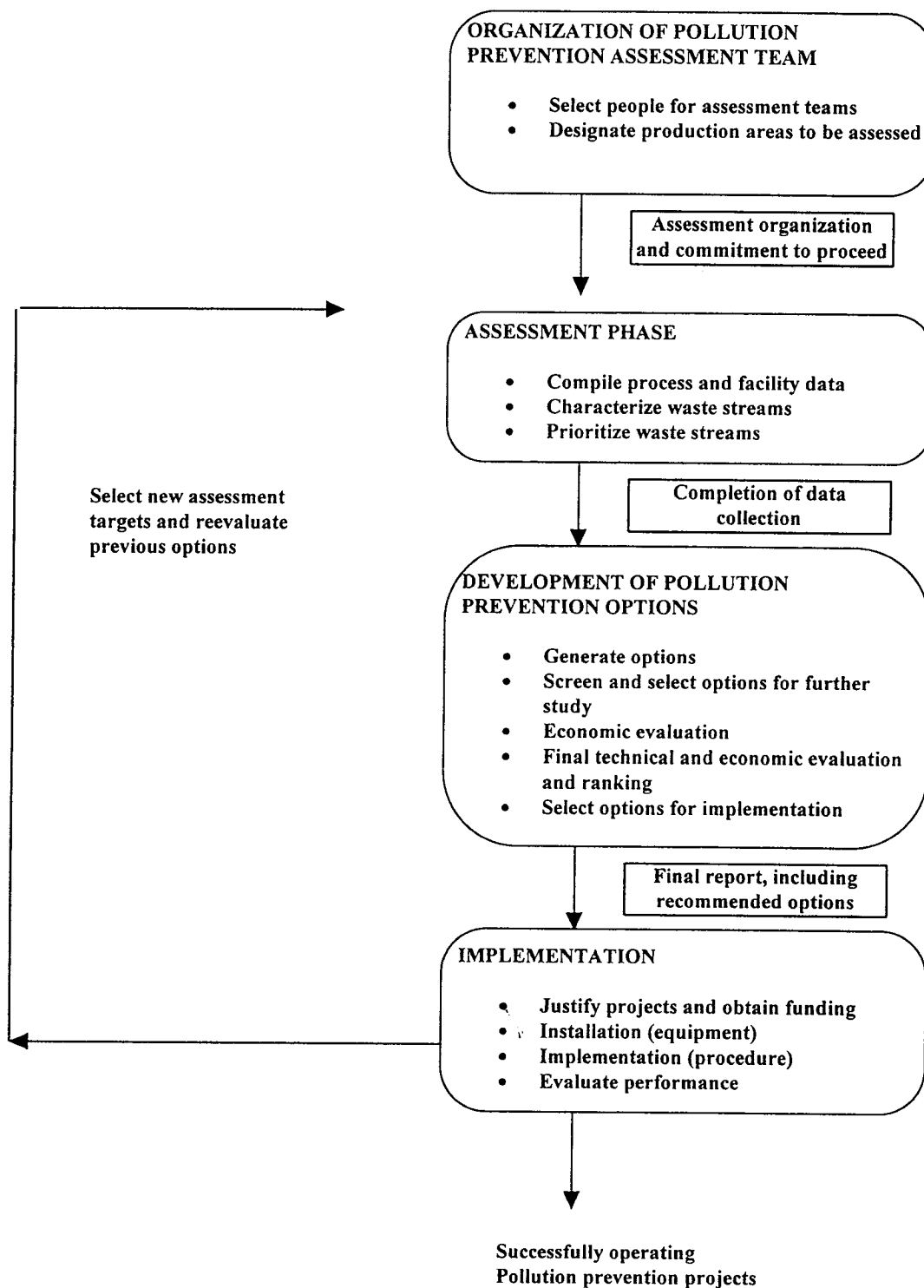


Figure 6-1, Pollution Prevention Assessment Overview

1. Planning and Organization Phase. The responsibility for conducting this phase of opportunity assessments rests with both the P2 Working Group and the team chief(s) of the Opportunity Assessment Team(s). The process or processes to be examined will be identified, then the appropriate team chief(s) will be selected. Depending upon the scope of the assessment effort, several weeks to several months will have to be scheduled for the assessment and associated reports to be issued by the opportunity assessment team. Before the final selection of team members, each potential team member should verify that time is available for full, meaningful participation in the assessment. Team members must commit sufficient time to keep the assessment on schedule. The team chief will verify that neither personal nor organizational commitments will hinder team members during the assessment effort. Once the team is selected the next phases of the assessment process can begin.
2. Assessment Phase. This phase of the opportunity assessment is under the control of the assessment team chief. The team chief will be responsible for organizing the team, scheduling and coordinating assessment activities, assigning tasks to the team members, overseeing the performance of the assigned tasks, compiling and documenting the assessment findings, and reporting to the P2 Working Group. Although the team chief will have to dedicate a significant amount of time to this effort, a full-time commitment is not required, so long as the assessment remains focused and on schedule.
 - a. Team Selection. With the assistance of the P2 Working Group, the team chief will select members to serve on the assessment team. Assessment team members must be familiar with the process to be examined and should have received assessment training. Team members will be drawn from different disciplines (Supply, Finance, Environmental, etc.) so they can provide the expertise necessary to conduct the specific assessment. Team members should also be familiar with pollution prevention principles and techniques. As with the team chief, team members must be available to accomplish their assigned tasks. Although an assessment could last for several weeks or months, team members are not expected to provide a full-time commitment, so long as the process remains on schedule.
 - b. Team Preparation. The team must complete the necessary training and orientation before the assessment can truly begin. The P2 Working Group will ensure that these actions are provided and completed. Once the assessment team has completed its own preparation, then pre-site visit activities can occur. The team may want to obtain the following types of information for the process they will assess:
 - (1) Supply/Distribution Records:
 - Raw material data;
 - Material Safety Data Sheets (MSDS); and
 - Chemical inventories.

(2) Equipment Maintenance Records:

- Equipment specifications/operating parameters.

(3) Technical Records:

- Process operations procedures; and
- Technical Order procedures and requirements.

(4) Supervisory Records:

- Quality assurance/quality control reports;
- Process flow diagrams; and
- Training records for process personnel.

(5) Permits and Permit Records:

- Air permit and logs;
- Water permit and discharge monitoring reports;
- Hazardous Waste permit, manifests, accumulation inventories, operations and inspection logs;
- Business Plan, Form R reports;
- Hazardous Waste Profile Sheets; and
- Hazardous material approval/authorization (30 AMDS/SGPB).

While not all of this information or all of these sources may be applicable, the assessment team must consider using all resources available to expedite the assessment. In addition to the above information, the assessment team will review the checklists and forms to be used during the site visit phase. This review will ensure that all necessary information is collected in the format required, and may save the need for repeat visits to the process site. Pollution Prevention Opportunity Assessment Worksheets, are provided in Appendix C3 as useful starting point for the assessment team.

- c. Site Visits. Upon completion of preparatory actions, the Opportunity Assessment Team will commence its site visit. The primary purpose of the site visit is to assess all pollutant sources, and examine material usage and waste generation by type and volume. In fact, process assessments are usually more focused and examine only a handful of targeted substances and determine ways to avoid the use or generation of those substances. As part of the site visit, the team will schedule the visit so as to limit disruption to the operation while at the same time ensuring that the entire process is examined, and that those most knowledgeable of the process are available to support the visit. The Opportunity Assessment Team will perform a cross-check between the process as spelled-out in standard

operating procedures and the process as observed or as conducted by the workers. By comparing what is stated about a process with what is actually done, the team may be able to identify easily achievable means for pollution prevention or reduction. Site visits must also be conducted following the checklists developed for that purpose; if not, the team may discover that it had an enjoyable visit but not an informative one, and the team is not able to make informed decisions or valid process comparisons. The site assessment should lead to the most practical and economical options for reduction.

- d. **Data Collection and Analyses.** During an opportunity assessment a great deal of data is collected. Data will be collected using standardized forms and checklists so that data manipulation and cross-process comparisons can be made to determine and select the most beneficial pollution reduction opportunities. All analyses will include a summation of cost-benefit, and a return on investment timetable. The result of data collection and analyses will be a list of options. Included in the options development task will be an assessment of the costs associated with implementation of each option to include: investment costs, training costs, disposal costs associated with the proposed change, recurring costs incurred by implementing the new idea, etc. The data collection and analyses process is not complete until opportunity assessments have identified sufficient options to equal or exceed the requirement, for example, 50 percent reduction in the disposal of a certain hazardous chemical. Data will be physically stored in a centralized location so that all team members can have access to the data. When the Environmental Compliance Management Information System (ECMIS) becomes available, this system will be used for opportunity assessment analyses.
- e. **Option Development.** Options include all possible ways to achieve the goals. Brainstorming by process knowledgeable personnel, literature review of previously examined processes, and ideas from outside sources are examples of how ideas (options) can be generated. Options may involve procedural changes, material substitutions, equipment purchases, facility modifications, or any combinations of these actions. Some options may also require the assistance of AFSPC or other Major Commands. In these cases, the Air Force Center for Environmental Excellence (AFCEE) will be contacted, so their clearinghouse capabilities can be used as an advantage, avoiding the pursuit of previously rejected options. AFCEE also has links to sources which share ideas and options for pollution prevention. Use of the Defense Environmental Network Information Exchange (DENIX) should also be considered, since DENIX offers environmental on-line resources. Included in their option development process, the opportunity assessment team will provide the following information:
 - A description of the option;
 - Which process(es) is affected by the option;
 - The value of the option in terms of substances and components affected;
 - The amount of reduction of each substance, by process;

- The unit cost of purchase or disposal for each substance;
 - The option's cost by program element and fiscal year; and
 - The return on investment, in years.
- f. **Screening and Selection of Options.** Once a sufficient number of options have been proposed, they will be considered in terms of their cost and benefit. Options will be evaluated based upon their contribution toward goals. While quantity is often of prime consideration, evaluation should not discount contributions toward reductions in cost or in toxicity (harmful environmental impacts). Initial screening will eliminate the marginal or impractical options, and will be used to rank the remaining options (See Figure 4-2). Based upon this initial screening, high-probability of success options are subjected to the more rigorous processes of technical and economic analyses. Suggested initial screening criteria are:
- What is the principal benefit of the option?
 - Does it use existing technology?
 - What kind of development effort is required?
 - Will implementation be constrained by time?
 - Does the option have a predictable and dependable performance record?
 - How easy will it be to implement the option?
 - Will the option be cost-effective?
- (1) **Technical Evaluation.** The AFCEE can assist with technical evaluations by providing information on the proposed option. If the option has been used at another installation, AFCEE should have this information available and that base could be contacted or visited to see how the option is functioning. The technology decision logic used in Figure 4-2 will also be applied to assessing the option's technical implications. Technical evaluation will also involve facility constraints and product requirements. The technical evaluations will also provide answers to the following questions:
- Is the option safe for workers?
 - Is space available for the option?
 - Will the option adversely affect quality?
 - Are the needed interfaces available or practical?
 - Are special equipment or personnel requirements needed to operate or maintain the new option?
- (2) **Economic Evaluation.** This type of evaluation depends upon accurate baseline costs. Also, economic evaluation must include all the costs associated with an option. The opportunity assessment team will ensure that all costs are captured before the team presents its recommendations to the P2 Working Group. While a payback period (payback (in years) = investment/annual cost savings) is useful for gauging the fiscal risks associated with an option, this should not be the only measure used by the

team. The cost savings associated with reducing or avoiding safety and/or environmental liabilities are also important. Sound judgment will be used in assessing the economic implications of these types of cost avoidance, and their importance to the option under consideration.

- (3) Final Selection. The final selection of options will be based upon sound and verifiable economic analysis. In addition, the scoring and ranking procedures in Figure 4-2 will be used when making the final selection of options. The experience of the P2 Working Group and the support of the EPC will also be critical as to which options are finally selected. Without "Team Vandenberg" buy-in and commitment even the most economically beneficial option may not succeed and produce the desired results.
3. Implementation Phase. Once the decision has been made to implement an option, actions will begin as soon as possible. Depending upon the type of option selected, equipment setup, operating procedures, and training may be required before the option is totally functional. These implementation preparation steps are not to be discounted or ignored, since they can have a significant impact on the success of the option. As part of implementation, operators and managers will be briefed on why the option was selected and what benefits are expected to be derived from the option. Any special recordkeeping or measurement requirements will be identified "up front" so that required data is collected from the start.
4. Evaluation of Option Effectiveness Phase. This phase compares expected benefits against actual benefits. The P2 Working Group will periodically review progress toward goals and evaluate the option's effectiveness. Progress toward goals will be measured using the metrics in AFRD 32-70. Evaluation closes the feedback loop and provides the P2 Working Group with the information needed to expand or delete options based upon actual experience and contribution toward the base's goals. This phase will lead to subsequent iterations of opportunity assessments.

